

IN THE CLAIMS:

Please cancel claims 1, 2, 5, and 6 without prejudice or disclaimer.

Please amend claims 3, 4, and 7 as indicated on the attached MARKED-UP PREVIOUS VERSION OF THE CLAIMS.

Please replace present claims 3, 4, and 7 with the amended versions thereof, as presented on the attached CLEAN COPY OF AMENDED CLAIMS.

REMARKS

Applicant respectfully requests reconsideration of this application, and reconsideration of the Office Action dated September 26, 2002 (Paper No. 3). Upon entry of this Amendment, claims 3, 4, and 7 will remain pending in this application. The amendments to the claims find support in the specification and original claims. The amendments to the claims place the claims in independent form by incorporation of all of the elements of original base claim 1 and, with respect to claims 3 and 4, intervening claim 2. Applicant has also made some editorial changes to the claims to address antecedent basis problems and a typographical error in response to the rejection under 35 U.S.C. 112. The amendments to claims 3, 4, and 7 do not narrow the scope of original claims 3, 4, and 7.

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The drawings are objected to because Figure 1 purportedly shows modified forms of construction in the same view. Particularly, the Office Action refers to the whole surface imaging means (58).

In response, Applicants submit herewith a Letter With Proposed Drawings Corrections and an amended version of Figure 1. The amended version of Figure 1

changes the “box” represented by reference numeral 58 so that it is represented by solid lines.

The change to Fig. 1 overcomes this objection. Accordingly, reconsideration and withdrawal of the objection are respectfully requested.

* * *

Claims 1-7 are rejected under 35 U.S.C. §112, second paragraph, as purportedly indefinite. Applicant respectfully traverses.

The Office action asserts that various terms in the claims lack proper antecedent basis. The Office Action also asserts that the term “relatively” should be “relative.”

In response, Applicant has amended the claims to ensure that each element has proper antecedent basis. In addition, the word “relatively” has been changed to “relative.”

The amendments to the claims and the above remarks overcome this rejection. Thus, reconsideration and withdrawal of this rejection are respectfully requested.

* * *

Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 102(e) as purportedly anticipated by Freund (U.S. Pat. No. 6,205,994) or Turner (U.S. Pat. No. 5,820,006).

Claims 1, 2, 5, and 6 have been cancelled by this Amendment thereby rendering this rejection moot.

* * *

Claim 4 is rejected under 35 U.S.C. 103(a) as purportedly obvious based on Freund and Turner, in view of Nishida (U.S. Pat. No. 6,014,965).

The Office Action asserts that Freund and Turner disclose every element of the claimed invention except for a whole-surface imaging means. The Office Action further asserts that Nishida describes a whole-surface imaging means. The Office Action thus concludes that it would have been obvious to provide the methods of Freund and Turner with the whole-surface imaging means described by Nishida.

Applicant's invention, as defined by claim 4, describes a method of cutting CSP substrates. In Applicant's method of claim 4, the whole surface of the frame that mounts the plural pieces of the CSP substrates is imaged by a whole-surface imaging means. Moreover, the mounting position of each of the CSP substrates on the frame is recognized by analyzing the obtained image and is stored. The means that plural CSP substrate are imaged at once. And, this in turn means that Applicant's method permits the shapes of plural CSP substrate to be recognized simultaneously.

While, Nishida describes an imaging means, the imaging means of Nishida is fundamentally different from the whole-surface imaging means of Applicant's invention. Nishida's imaging means recognizes the shape of a single semiconductor wafer. See Column 7, Lines 37 to 45 and Column 9, Lines 38 to 54. This is completely different from Applicant's method of claim 4 that requires that the imaging means be used to image plural CSP substrates (and therefore shapes of the plurality of CSP substrates). None of the cited prior art documents teaches or fairly suggests a method where a whole surface imaging means simultaneously recognizes the shapes of a plurality of CSP substrates. Moreover, there is nothing in the prior art which would provide the requisite motivation to those of ordinary skill in the art to modify the methods of the prior art to employ a whole-surface imaging means as recited in claim 4. In fact, Nishida implicitly teaches away from Applicant's invention in that the imaging means of Nishida only recognizes a single wafer.

Since, the prior art of record fails to teach or fairly suggest each and every element of Applicant's invention, the rejection is improper. Hence, reconsideration and withdrawal of this rejection are respectfully requested.

* * *

Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as purportedly obvious based on Freund and Turner in view of Yoshii et al. (U.S. Pat. No. 6,250,990).

Claims 1, 5, 6, and 7 are rejected under 35 U.S.C. 103(a) as purportedly obvious based on Ishiwata et al. (U.S. Pat. No. 6,102,023) in view of Freund.

Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as purportedly obvious based on Ishiwata et al. in view of Freund, and further in view of Yoshii et al.

Claim 4 is rejected under 35 U.S.C. 103(a) as purportedly obvious based on Ishiwata et al. in view of Freund, and further in view of Nishida.

These four rejections are addressed together as similar issues apply to all four. Furthermore, Applicant traverse all four rejections.

The Ishiwata and Yoshii patents, and the present application (and invention) are all subject to the same owner, namely, Disco Corporation. Hence, since both Ishiwata and Yoshii qualify as prior art under 35 U.S.C. 102(e) both can be disqualified as prior art under 35 U.S.C. 103(c). To disqualify Ishiwata and Yoshii as prior art, Applicant makes the following statement, U.S. Application No. 09/752,563, U.S. Patent No. 6,102,023 to Ishiwata et al. and U.S. Patent No. 6,250,990 to Yoshii et al. were, at the time the invention of U.S. application No. 09/752,563 was made, owned by Disco Corporation. Accordingly, all four of the above identified alleged prior art rejections are overcome and the withdrawal of all four is respectfully requested.

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Applicant respectfully submits that this Amendment and the above Remarks obviate the outstanding objection and rejections in this case, thereby placing the application in condition for immediate allowance. Allowance of this application is earnestly solicited.

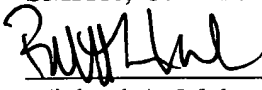
If any fees under 37 C.F.R. §§ 1.16 or 1.17 are due in connection with this filing, please charge the fees to Deposit Account No. 02-4300; Order No. 033773.013.

If an extension of time under 37 C.F.R. § 1.136 is necessary that is not accounted for in the papers filed herewith, such an extension is requested. The extension fee should

be charged to Deposit Account No. 02-4300; Order No. 033773.013.

Respectfully submitted,

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MARKED-UP PREVIOUS VERSION OF THE CLAIMS

3. (Amended) A method of cutting CSP substrates [according to claim 2]

comprising the steps of:

mounting plural CSP substrates on a single frame without overlapping them one upon the other, each CSP substrate having CSPs formed on plural rectangular regions thereof sectioned by cutting streets arranged in a form of a lattice;

recognizing a mounting position of each of said CSP substrates on said frame and storing the mounting positions in a storage means;

securing said frame mounting said plural CSP substrates onto a chuck;

imaging a surface of each of said CSP substrates by a precision imaging means, recognizing the positions of said cutting streets of each of said CSP substrates on said frame secured onto said chuck by analyzing the obtained image, and storing a position of each of said cutting streets in said storage means;

positioning said chuck, to which said frame is secured, relative to each other with respect to said precision imaging means based on the stored mounting position of each of said CSP substrates on said frame at a time of imaging the surface of each of said CSP substrates by said precision imaging means; and

cutting each of said CSP substrates along said cutting streets by moving said chuck and a cutting means relatively to each other based on the stored position of said cutting streets of each of said CSP substrates, wherein

said frame has an opening at a central portion thereof, a mounting tape extending across said opening is stuck onto a back surface of said frame, and said CSP substrates are each stuck onto said mounting tape so as to be positioned in said opening of said frame, and

said mounting tape has plural mounting position indications for indicating the mounting position of each of said CSP substrates, and the mounting position of each of said CSP substrates on said frame is recognized by viewing by eyes said mounting position indications and is manually input to said storage means.

4. (Amended) A method of cutting CSP substrates [according to claim 2]
comprising the steps of:

mounting plural CSP substrates on a single frame without overlapping them one upon the other, each CSP substrate having CSPs formed on plural rectangular regions thereof sectioned by cutting streets arranged in a form of a lattice;

recognizing a mounting position of each of said CSP substrates on said frame and storing the mounting positions in a storage means;

securing said frame mounting said plural CSP substrates onto a chuck;

imaging a surface of each of said CSP substrates by a precision imaging means, recognizing the positions of said cutting streets of each of said CSP substrates on said frame secured onto said chuck by analyzing the obtained image, and storing a position of each of said cutting streets in said storage means;

positioning said chuck, to which said frame is secured, relative to each other with respect to said precision imaging means based on the stored mounting position of each of said CSP substrates on said frame at a time of imaging the surface of each of said CSP substrates by said precision imaging means; and

cutting each of said CSP substrates along said cutting streets by moving said chuck and a cutting means relatively to each other based on the stored position of said cutting streets of each of said CSP substrates, wherein

said frame has an opening at a central portion thereof, a mounting tape extending across said opening is stuck onto a back surface of said frame, and said CSP substrates are each stuck onto said mounting tape so as to be positioned in said opening of said frame,

the whole surface of said frame that mounts plural pieces of said CSP substrates is imaged by a whole-surface imaging means, and

the mounting position of each of said CSP substrates on said frame is recognized by analyzing the obtained image and is stored.

7. (Amended) A method of cutting CSP substrates [according to claim 1] comprising the steps of:

mounting plural CSP substrates on a single frame without overlapping them one upon the other, each CSP substrate having CSPs formed on plural rectangular regions thereof sectioned by cutting streets arranged in a form of a lattice;

recognizing a mounting position of each of said CSP substrates on said frame and storing the mounting positions in a storage means;

securing said frame mounting said plural CSP substrates onto a chuck;

imaging a surface of each of said CSP substrates by a precision imaging means, recognizing the positions of said cutting streets of each of said CSP substrates on said frame secured onto said chuck by analyzing the obtained image, and storing the position of each of said cutting streets in said storage means;

positioning said chuck, to which said frame is secured, relative to each other with respect to said precision imaging means based on the stored mounting position of each of said CSP substrates on said frame at a time of imaging the surface of each of said CSP substrates by said precision imaging means; and

cutting each of said CSP substrates along said cutting streets by moving said chuck and a cutting means relatively to each other based on the stored position of said cutting streets of each of said CSP substrates, wherein

said frame and a pick-up means are positioned relatively to each other based on the stored positions of the cutting streets of said CSP substrates, and

plural CSPs that have been cut are individually picked up from said frame by said pick-up means.